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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Enrico Calamai

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Potomac Patent Group PLLC

P.O. Box 270

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EXAMINER

COMLEY, ALEXANDER BRYANT

ART UNIT

PAPER NUMBER

3746

NOTIFICATION DATE

DELIVERY MODE

07/10/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

tammy@ppglaw.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/539,378	<b>Applicant(s)</b> CALAMAI, ENRICO	
	<b>Examiner</b> ALEXANDER B. COMLEY	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/21/2009</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 21<sup>st</sup>, 2009 has been entered.

### ***Status of the Claims***

2. The Examiner acknowledges receipt of Applicant's amendments, remarks, and arguments filed with the Office on April 21<sup>st</sup>, 2009 in response to Final Office Action mailed by the Office on January 21<sup>st</sup>, 2009. Per Applicant's response, Claims 6-10 and 12-13 have been amended, while Claims 14-23 have been newly-added. Claims 1-5 remain cancelled due to a prior amendment. Therefore, Claims 6-23 are now pending in the instant application. The Examiner has carefully considered each of Applicant's arguments and amendments, and they will be addressed below.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 6-8, 10-12, 14-20, and 22-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,209,076 to Kauffman et al. directed to a Control System for Preventing Compressor Damage in a Refrigeration System in view of United States Patent Application Publication No. 2002/0141877 to Jayanth et al. directed to a Compressor Diagnostic System.

Regarding Independent **Claims 6, 10, and 18**, Kauffman discloses a microprocessor-based compressor control device (i.e. computer readable medium) that detects abnormalities in a compressor's operation through implementation of a control method. To begin, Kauffman discloses sensed conditions (i.e. measured parameters), manually entered data (i.e. a safety range), and reference parameters stored in a database (i.e. timeout periods) by stating, "If a sensed condition is outside of a safety range and remains there for a time out period, an alarm condition is indicated and the device generates an alarm signal and shuts down the compressor." (Abstract) From this disclosure alone, it can be seen that the monitoring system of Kauffman utilizes 1) Measured Parameters (i.e. sensed condition); 2) Manually-Entered Data (i.e. a safety

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range); and 3) Reference Parameters (i.e. time out periods). Kauffman further discloses measured parameters and manually-entered parameters by stating, "In accordance with the invention, a microprocessor based monitoring device makes use of sensors which detect various conditions at selected locations in a refrigeration system. Pressure and temperature sensors on the suction side of the compressor provide information that allows the superheat to be computed. High and low safety limits for the superheat of the particular refrigerant can be entered. If the actual superheat falls outside of the programmed safety range, the compressor is automatically shut off and alarm signals are generated to indicate the presence of problem conditions." (Column 1, Line 64 – Column 2, Line 6) Applicant's third set of parameters (the reference parameters) are disclosed by Kauffman's "timeout periods". Applicant does not define in the claims exactly what the reference parameters correspond to; merely that they "relate to the operating state of the compressor". Therefore, Kauffman's timeout periods, which directly relate to whether or not a compressor abnormality is detected (i.e. the operating state), are considered reference parameters indicating the operational state of the compressor. In regards to these timeout periods, Kauffman states "Additional sensors monitor conditions such as the compressor discharge pressure and temperature, motor current draw and oil pressure. Again, safety limits are entered and the device automatically shuts down the compressor and provides an alarm signal if the system is operating outside of a safe operating range with respect to any of the conditions that are being monitored. In order to prevent aberrational or transient conditions from shutting down the compressor, each parameter that is being monitored is given a time out period

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during which an abnormal condition must continue before shut down occurs." (Column 2, Lines 7-19) Kauffman even goes on to state "In block 126, various time out periods are set at preprogrammed initial values. For example, an amperage high limit timer, a superheat start delay timer, an oil pressure low limit timer, a discharge temperature high limit timer and a discharge pressure high limit timer are all set at initial values which are either programmed at the factory or in the field through entries made on the key pad. " (Column 5, Lines 46-53) From this disclosure, it can be seen that a user can program various timeout periods for varying operating conditions relating to the compressor in order to accurately and efficiently protect the compressor from abnormal operation conditions. Kauffman also discloses utilizing the monitoring system to read operating parameters from a design program to insure a compressor's adherence to observed operating trends (i.e. design specifications). In particular, Kauffman states "The device of the present invention can be incorporated as an original part of the refrigeration system, it can be added as an after market item permanently installed on an existing refrigeration system, or it can be used as a portable service tool which can be temporarily attached to different refrigeration systems in order to obtain representative samples of the operating characteristics. The data can be collected over an extended time period to indicate any trends that may be present." (Column 2, Lines 36-40) Kauffman goes on to say "Alternatively, the device can be provided as a portable servicing tool which can be temporarily attached to a refrigeration system in order to monitor its operation for a pre-selected time period such as a one or two day period to determine if there are any operating irregularities. By providing for the field

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programming of the limits and time out periods, users can customize the device (i.e. design) in the field to conform with different types of cooling systems which may require different limits and time out periods. Consequently, the device is adapted for use with a wide variety of different types and sizes of mechanical cooling systems.” (Col. 10, Lines 3-15) Hence, Kauffman's system utilizes design specifications (i.e. operating characteristics) in another comparison in order to determine if the compressor system is functioning properly relative to other comparable compressor systems. Kauffman goes on to disclose utilizing these design specifications in a design program (i.e. graph, etc) by stating “For example, each condition can be sensed every ten minutes over a period of five days, and the data can be presented in the form of a graph or in any other meaningful format.” (Column 2, Lines 41-44) This disclosure shows that Kauffman's monitoring system can read parameters (i.e. limits and time out periods) that are calculated by design programs and/or graphs in order to provide a great degree of versatility to the compressor. To conclude, from the disclosures listed above, it is apparent that multiple comparisons are repeatedly completed (as is apparent from the use of varying timeout periods for different compressor parameters) between the four types of compressor parameters in order to efficiently detect abnormalities over the span of the compressor's operation (Applicant does not specify when the first and second comparisons are done in relation to one another). However, although Kauffman discloses the majority of claimed elements present in Applicant's independent claims, it fails to substantially and specifically disclose a database of previously stored anomalies.

However, the Jayanth et al. portion of the combination successfully discloses the

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final remaining element missing from the Kauffman reference. In particular, Jayanth discloses a compressor diagnostic system for use in a refrigeration or air conditioning system that is designed to detect faults in the compressor and alert the user to the exact nature and cause of the fault from a pre-loaded database of faults. To begin, Jayanth states "The present invention provides a device which is based on this principle. The device of the present invention continuously records the status of the protector (open or closed) as a function of time and then it analyzes this status information to determine a faulty situation. The device goes further and isolates the fault to either the compressor or to the rest of the system. Once the fault has been isolated, the device will activate a visual indicator (light) and it will also send an electrical signal to any intelligent device (controller, computer, etc.) advising about the situation." (Paragraph 6) More specifically, Jayanth states "Logic circuitry 104 analyses the combination of current signals, the demand signal and the derived protector trip frequencies to determine if a fault condition exists. Logic circuitry also has the unique capability of identifying a specific cause based on some faults." (Paragraph 29) Most importantly, however, is Jayanth's specific disclosure regarding a plurality of stored fault codes that are detected and displayed by the monitoring system in order to accurately tell a technician the characteristics of the fault. In particular, Jayanth states "This scheme of the blinking of light 112 for a specific number of times is employed to visually communicate to the technician the various types of faults detected by logic circuitry 104. While the present invention utilizes blinking light 112 to convey the fault codes, it is within the scope of the present invention to utilize a plurality of lights to increase the effectiveness



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of conveying a large number of fault codes if desired.” (Paragraph 30) Both Kauffman and Jayanth are specifically aimed at protecting compressors from faults and/or operational anomalies in order to increase compressor life. Therefore, to one of ordinary skill desiring a longer-lasting compressor system, it would have been obvious to utilize the techniques disclosed in Kauffman in combination with those seen in Jayanth in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the monitoring system of Kauffman with the database of predetermined faults seen in Jayanth in order to obtain predictable results; those results being a better-protected compressor system that accurately alerts a user to the nature of the fault.

5. In regards to dependent **Claims 7-8, 11-12, & 19-20**, the Kauffman portion of the combination specifically discloses utilizing the monitoring system to insure a compressor’s adherence to observed operating trends (i.e. design specifications). In particular, Kauffman states "The device of the present invention can be incorporated as an original part of the refrigeration system, it can be added as an after market item permanently installed on an existing refrigeration system, or it can be used as a portable service tool which can be temporarily attached to different refrigeration systems in order to obtain representative samples of the operating characteristics. The data can be collected over an extended time period to indicate any trends that may be present.” (Column 2, Lines 36-40) Hence, Kauffman's system utilizes design specifications (i.e. operating characteristics) in another comparison in order to determine if a particular

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compressor system is functioning similarly to other comparable systems. Kauffman goes on to disclose utilizing these design specifications in a design program (i.e. graph, etc) by stating "For example, each condition can be sensed every ten minutes over a period of five days, and the data can be presented in the form of a graph or in any other meaningful format." (Column 2, Lines 41-44) This disclosure shows that Kauffman's monitoring system can read parameters (i.e. limits and time out periods) that are calculated by design programs and/or graphs in order to provide a great degree of versatility to the compressor. Regarding dependent **Claims 14, 16, & 22**, the comparisons done by the Kauffman's monitoring system are done repeatedly (as is apparent from the use of multiple timeout periods for different compressor parameters) while the compressor is operating, thereby providing a large number of independent comparisons throughout the compressor's operation (It is important to note that Applicant does not specify when the first and second comparisons are done in relation to one another). In regards to dependent **Claims 15, 17, & 23**, Kauffman specifically discloses the use of displays to show the presence of compressor faults by stating "A detachable display module includes a keypad for carrying out field programming and a LCD screen for displaying the refrigerant conditions and programming prompts and commands." (Abstract) Kauffman goes on to say "Preferably, the device includes a display such as a liquid crystal display, along with a key pad for entering program commands and functions and LED indicators for identifying alarm conditions. The data can be displayed on the LCD screen on the unit, it can be printed out by a printer, or it can be transmitted via a modem over telephone lines to allow display on a remote

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computer screen. Alternatively, the unit can be programmed to automatically dial a programmed telephone number in the event of a compressor shut down so that appropriate personnel are alerted to the problem and can take whatever corrective action is indicated under the circumstances.” (Col. 2, Lines 45-58) Therefore, to one of ordinary skill desiring a more efficient compressor system, it would have been obvious to utilize the techniques disclosed in Kauffman in combination with those seen in Jayanth in order to obtain predictable results (i.e. a compressor that operates within spec).

6. **Claims 9, 13, & 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,209,076 to Kauffman et al. in view of United States Patent Application Publication No. 2002/0141877 to Jayanth et al as applied to claims 6-8 and 10-12 above, and further in view of United States Patent No. 6,448,982 to Klapper et al. directed to a System for Graphically Generating Logic for a Cause and Effects Matrix..

The Klapper et al. portion of the combination discloses the use of a "cause-and-effect" matrix for use in a monitoring system. Moreover, Klapper specifically discloses a matrix database and corresponding digital computer by stating “The system includes a general purpose digital computer that incorporates a matrix programming tool to input data defining the matrix and generate a matrix database. The tool also transfers the matrix database to a programmable logic controller.” (Abstract) Furthermore, with particular reference to Figure 1 of Klapper, it can be seen the multiple critical limits are

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placed in each row of the matrix with corresponding descriptions of the specific corresponding anomalies. Some examples of Klapper's system anomalies include high process flow and high or low fuel pressures. Klapper goes on to describe the structure of the control matrix by stating "The present invention enables a user to graphically create and configure a matrix with data that defines input elements or variables that require monitoring, output responses to changes in the input elements/variables, also referred to as input parameters, being monitored and the relationship between the input elements/variables and the output responses. Once the matrix is created, the user can transfer the defining data to a programmable logic controller 78 to generate logic to implement the matrix. The programmable logic controller 78, as illustrated in FIG. 2 may comprise a central processing unit 7, an input device 9, an output device 11, and a memory element 13. The memory element 13 may be a combination of read only memory (ROM) and random access memory (RAM)." (Column 3, Lines 40-53) Klapper further states that a user can add specific anomalies to the matrix in order to monitor various desired aspects of the system. Therefore, to one of ordinary skill desiring a more accurately controlled compressor system, it would have been obvious to utilize the techniques disclosed in the Kauffman-Jayanth combination in combination with those seen in Klapper et al in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the monitoring system of the Kauffman-Jayanth combination with the anomaly-specific matrix of Klapper et al. in order to obtain predictable results; those results being a more accurately controlled compressor system that monitors specific anomalies.

***Response to Arguments***

7. Applicant's arguments filed on April 21<sup>st</sup>, 2009 have been fully considered but they are not persuasive. The Examiner's responses can be seen below.

8. In regards to Applicant's argument that Kauffman's timeout periods are not compressor parameters that relate to the operational state of the compressor, the Examiner must respectfully disagree. As stated above, Kauffman's system specifically uses various timeout periods for a plurality of compressor operating parameters in order to accurately and efficiently regulate the compressor's operation. The timeout periods that are utilized in the monitoring system are compared with the actual amount of time that an abnormal measured parameter or sensed condition remains outside the manually entered safety range. Assuming the parameter lasts longer than the timeout period, the system reacts appropriately and shuts down the compressor. It is in this way that the timeout periods are compared with the measured and manually-entered parameters of the compressor. The fact that the timeout periods are arbitrary values or not is not relevant to the claim, as Applicant does not claim that they must be otherwise.

9. In regards to Applicant's argument that Kauffman's system does not disclose a second comparison, the Examiner must respectfully disagree. As stated above, multiple comparisons are repeatedly completed (as is apparent from the use of varying timeout periods for different compressor parameters) between the four types of compressor parameters in order to efficiently detect abnormalities during the

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compressor's operation. The Examiner must assert that Applicant does not specify when the first and second comparisons are performed in relation to one another.

Moreover, Kauffman discloses the use of multiple timeout periods for different compressor parameters by stating "In order to prevent aberrational or transient conditions from shutting down the compressor, each parameter that is being monitored is given a time out period during which an abnormal condition must continue before shut down occurs." (Col. 2, Lines 14-19) Therefore, because the compressor monitoring system monitors a plurality of compressor parameters using different timeout periods for each, it is clear that more than two comparisons are done with the monitoring system of Kauffman. Hence, first and second comparisons are performed in Kauffman.

10. In regards to Applicant's argument that Kauffman does not disclose the act of obtaining design specifications from a design program, the Examiner must respectfully disagree. As stated above, Kauffman discloses utilizing the monitoring system to read operating parameters from a design program to insure a compressor's adherence to observed operating trends (i.e. design specifications). In particular, Kauffman begins by stating, "The device of the present invention can be incorporated as an original part of the refrigeration system, it an be added as an after market item permanently installed on an existing refrigeration system, or it can be used as a portable service tool which can be temporarily attached to different refrigeration systems in order to obtain representative samples of the operating characteristics. The data can be collected over an extended time period to indicate any trends that may be present." (Column 2, Lines

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36-40) Kauffman goes on to say "Alternatively, the device can be provided as a portable servicing tool which can be temporarily attached to a refrigeration system in order to monitor its operation for a pre-selected time period such as a one or two day period to determine if there are any operating irregularities. By providing for the field programming of the limits and time out periods, users can customize the device (i.e. design the device) in the field to conform with different types of cooling systems which may require different limits and time out periods. Consequently, the device is adapted for use with a wide variety of different types and sizes of mechanical cooling systems." (Col. 10, Lines 3-15) Hence, Kauffman's system utilizes design specifications (i.e. operating characteristics) in another comparison in order to determine if the compressor system is functioning properly relative to other comparable compressor systems. Kauffman goes on to disclose utilizing these design specifications in a graph (i.e. design program) by stating "For example, each condition can be sensed every ten minutes over a period of five days, and the data can be presented in the form of a graph or in any other meaningful format." (Column 2, Lines 41-44) The Examiner must therefore assert that this disclosure shows that Kauffman's monitoring system reads parameters (i.e. limits and time out periods) that are calculated by design programs and/or graphs (generated through compressor sampling) in order to provide a greater degree of versatility to the compressor.

***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/  
Examiner, Art Unit 3746

/Charles G Freay/  
Primary Examiner, Art Unit 3746

ABC